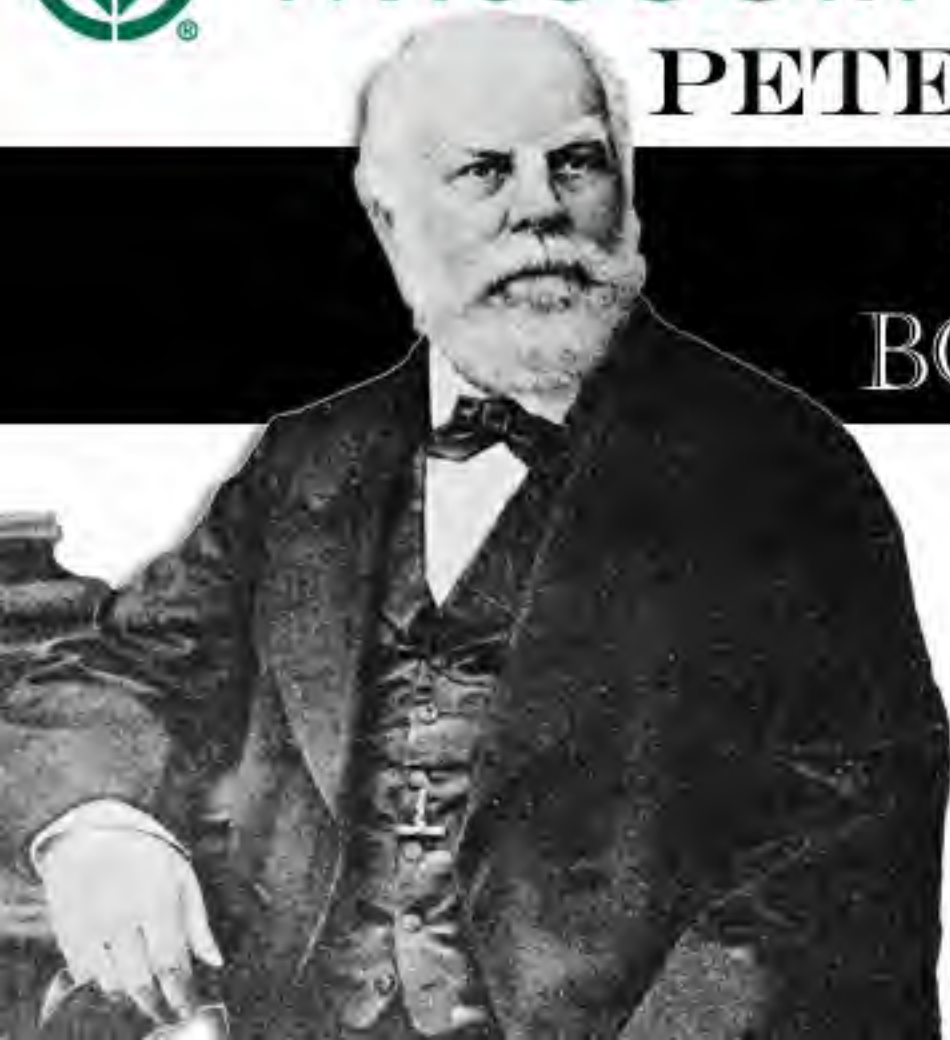


MISSOURI BOTANICAL GARDEN
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GEORGE ENGELMANN
BOTANICAL NOTEBOOKS

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coarse rugæ or pittings, which
ering.

Dimensions.—Length, 0.20 of an inch; width, 0.18.

The *Elæacrinus Kirkwoodensis* is nearly allied to *E.*
(*Pentremites*) *melo*, from which it is distinguished by its
much smaller size and less deeply excavated base. It also
occupies a higher geological position.

Occurs in the St. Louis Limestone (Carboniferous) on the
Pacific railroad near Kirkwood, St. Louis county, Missouri.

8.

2 leaves (-3) periph ducts
(hypoderm)

Tabler 9

Pinus Pinca L

ducts few, marginal
with hypoderm
maturatus triennis



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30' west of Greenwich, west of south of Salt Lake, in the same range of mountains, on Capt. Simpson's return trail. Circumstances prevented me from obtaining more than a few crystals, which are now deposited in the collection of the Smithsonian Institute; a few others are also in the hands of members of the party. We were travelling at the time by forced night marches with nearly worn out animals, seeking to gain a spring of water in a distant range of mountains. This desert was then entirely unexplored. I have but little doubt that more interesting materials are to be found at the same point.

The mountains of the former Territory of Utah promise a rich yield to the mineralogist. We know already of gold and silver ores in the east, west and south part of that district; of copper and lead ores in the south, and I have discovered the latter also in the centre of it; of specular iron ores and native sulphur in the Rocky Mountains and near Little Salt Lake; of rock salt in the mountains south-east of Utah Lake; of native alum near Salt Lake; of various other salts in the deserts; and of silicates, composing the granites, porphyries, diorites, trachytes, and lavas, nearly over the whole area.



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Pinus Pinea

Pisa, Savi

June 1864
2. 1865
ex Herb. Com.

Size of Pollen x 415



0.043 - 0.044 lin

many grains, all uniform

36.7 - 38.2

4PS

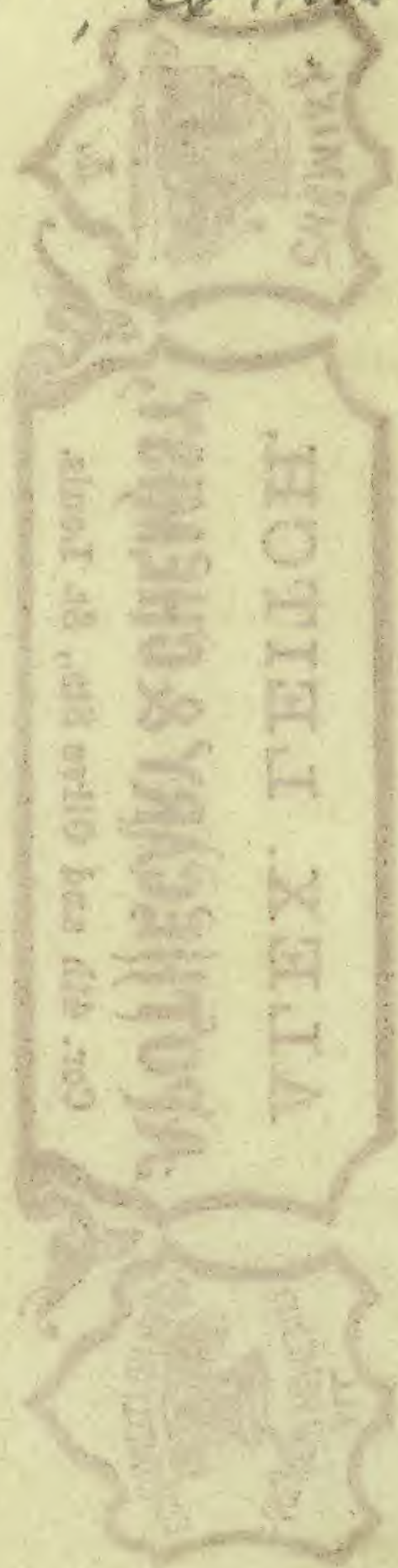
= 0.088 - 0.094

mostly 0.090 mm



x4

ament



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CHEMIST

ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

ALL THE NEW REMEDIES
CONSTANTLY ON HAND



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26235 chrysanth 2 1 "

Espèce d'un beau port, floraison abondante;
fleur grande, d'un superbe jaune pur.

26896 — — double en mélange 2 2 50

Plantes magnifiques; très-bonnes pour cor-
beilles, bordures, etc., en pleine terre pendant
la belle saison.

J. Gerardiana



Aster vivace.



Aquilegia chrysantha.



Aster vivace.

O. Gerardiana

3 tab

3.
Luth
periph

2-1
♀



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great.
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crops
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some
led at
eight
1865,
The
The
and

Bungeana

Calceolaire hybride naine choix extra.



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Letter of

June

Combs & Pines

542

THE SCIENTIFIC MONTHLY.

edges are indented, but they are soon lost in the general mass of the nimbus or rain clouds.

The destruction to property occasioned by hail-stones is frequently very great. In the storm that visited France in July, 1788, no less than 1,039 communes were devastated, and the damage was estimated at not less than \$5,000,000. Crops were cut to pieces, and the smaller animals killed. Some of the stones weighed 3,900 grains, or more than half a pound. They were of various shapes, some spherical, others long and pointed, and some pyramidal. This storm traveled at the rate of thirty-two miles an hour. The hail fell for not more than seven or eight minutes in the same locality. In the storm that occurred in France in May, 1865, the hail-stones covered the ground with a thick layer twenty leagues wide. The hail-stones did not melt for four days.

In a fall of hail in 1852 (France) the stones were as large as hens' eggs. The crops were cut to pieces, trees entirely stripped of their leaves, cattle, sheep and pigs severely injured, windows broken, and the whole district deprived of game; many of the smaller animals were killed outright, even the wolves were found dead in the woods. In some sandy places hollows were found as if made by cannon balls, occasioned by the force of impact of the hail-stones.

These are exceptional cases. In most instances the fall of hail is not accompanied by such disastrous results. Although hail storms are accompanied by the development of vast amounts of electricity, and the hail cloud is loaded with vast amounts of the electric fluid, which is continually developed, yet the greater por-

3 ~~leaves~~ R. Orangeans

5th mostly peripheral facts

G. Bungeana

26896	— — double en mélange	⊙	⌘	..	..	2 50
-------	-----------------------	---	---	----	----	------

— — — double en mélange ④ ½
Plantes magnifiques; très-bonnes pour cor-
beilles, bordures, etc., en pleine terre pendant
la belle saison



THE SCIENTIFIC MONTHLY.

541

short time, it corrupts and emits an offensive odor. This singular stream probably owes its peculiar properties to the presence of innumerable quantities of minute infusoria.

Thus it is seen that the power of the wind is sufficient to lift and carry to great distances large bodies. Through its agency are accounted for all the singular phenomena of the atmosphere, which once were given a supernatural cause.

HAIL.

Hail is the watery vapor of the atmosphere, congealed in icy masses, and precipitated upon the earth. It usually falls in the warmest part of the day, and is most frequent in spring and summer. It is formed like rain, from the watery vapor of the atmosphere, but amidst an atmospheric cold which freezes the globules of water at the very moment of their formation. To effect this phenomena the lower strata of air must be very hot, while the upper currents of the atmosphere must be intensely cold. The following is the usual process of its formation :

P. Bungeana Juss. China, cult,
Fortune. rarely 2, mostly 3
leaves - cone (does it belong here)
as figured by Murray (Japan Pines)
cembroidlike, but with short ^{p. 18} recur-
ved prickles on the under of the leaf,
seeds large, wing small.
Cone in the Coll. of the Museum -
Maybe the ^{Chinese} ~~Japanese~~ representation
of our Cembroid Pines.
Leaves loose their sheaths ^{very}
soon.

The British Museum Sept 15 1869



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Pinus Bungeana (Juss.) Endl. Conif 186
ex Murray Conif Jap. 1863 p. 18
1847



Bark of the old tree peels off like
Arbutus [or Platanus?] leaving the trunk
nearly white and smooth



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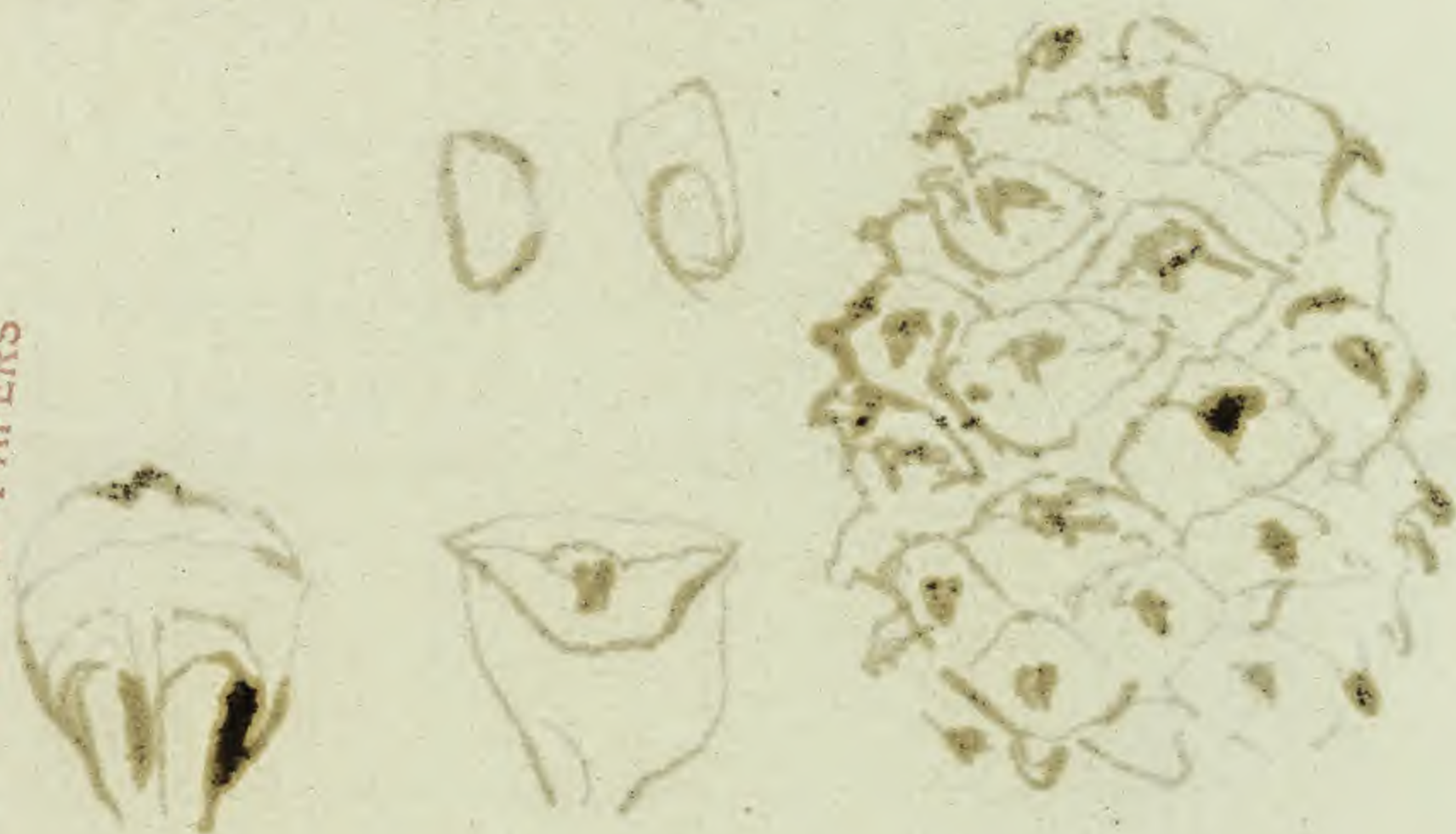
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May 5 1878

x 30

2 taken



I find this section
mixed with *Rhus Benggana*
to which it can not well
belong



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GARDEN

HENRY T. ROHLING,

APOTHECARY,

No. 2600 Laclede Ave., S. W. Cor. Jefferson Ave.,
ST. LOUIS, MO.

No. Date, ... 187

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11595

Geo. Engelmann, M. D.,

No. 3003 Locust Street.



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Pinus sylvestris

JOURNAL OF PROCEEDINGS.

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Dr. Koch presented specimens of quartz and of the silicious conglomerate from Madison County mentioned in Dr. Hilgard's letter.

Dr. Engelmann stated that the mean temperature of July (77.5) had been lower than the usual mean of that month, and that the fall of rain during the same month (2.04 inches) was about one-half less than usual.

Dr. Wislizenus stated that the mean of atmospheric electricity of July had been 3.5° less than that of the month previous, and that the amount had been gradually decreasing since winter.

—
August 19, 1861.

The President, Dr. ENGELMANN, in the chair.

Six members present.

A letter was read from A. F. Bandelier, Jr., Highland, Ill., Aug. 1, 1861, communicating meteorological observations at Highland.

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540-2

Pinus Pumilio
montana

JOURNAL OF PROCEEDINGS.

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8 Feb

GARDEN
PAPERS

Alfred Russel
Gardner
(1844-1902)
that month

11597

162 TRANS. OF THE ACAD. OF SCIENCE.

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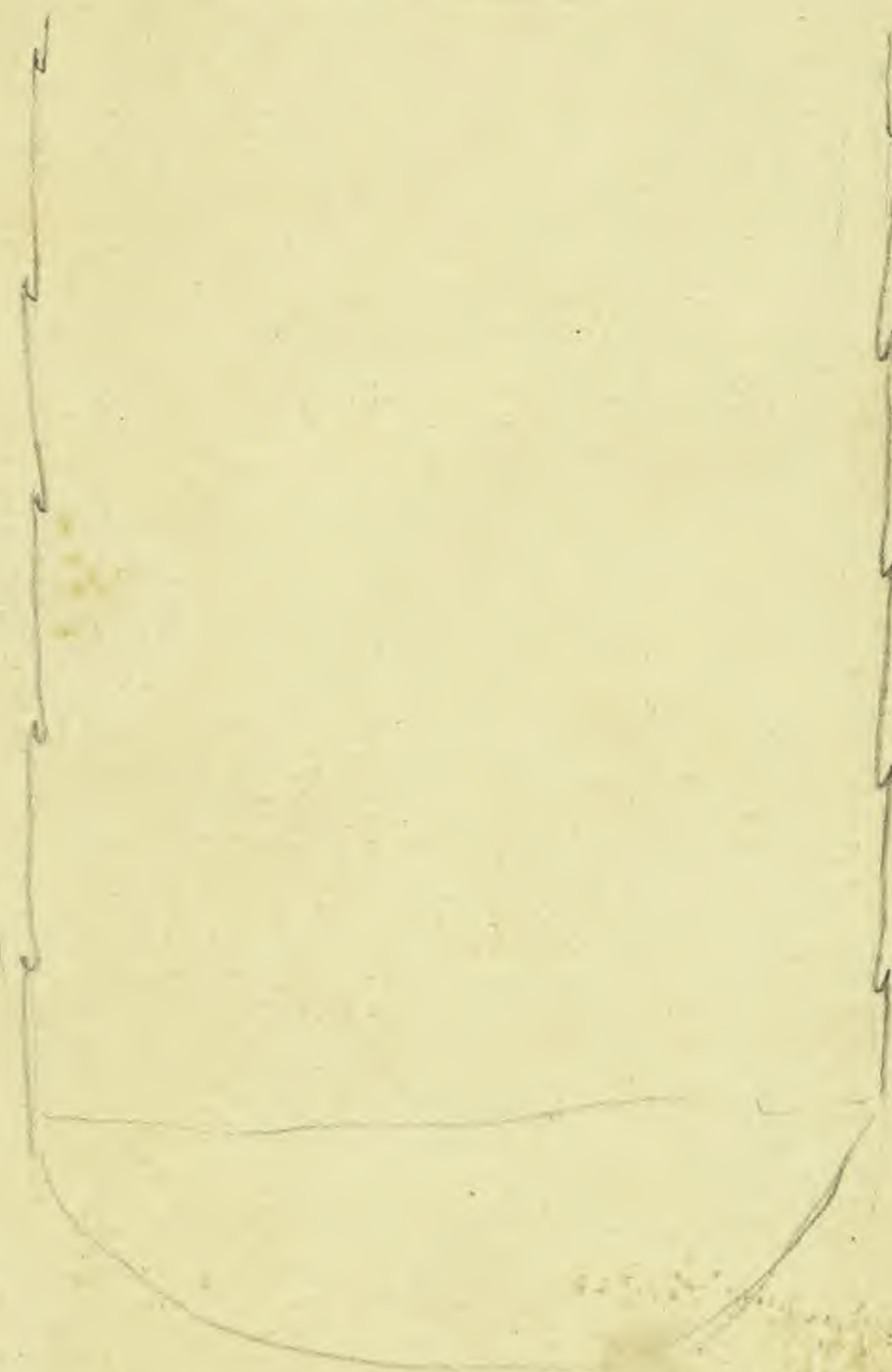
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X30.

Pinus pungens

cult. Chaddsford Pa

Aug 14 1865



cult Hort. Bot
Missouri
May 1876

♂ 8-9 in. long
scales



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Pinus Mughus

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"*Pinus Muhlenbergii*"

H.B. Morrison May 10



apparent arrangement of the 6 ring
scales seen in numerous
amounts examined — all
pushed backward — open space
upwards

lateral exterior scales very large, broad,
narrowly ciliate



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X 30

Pinus mugheana

Aug. 1863

H. B. Cambr.

leaves of last year



Dry



moistened
humected
soaked



ST. LOUIS.

SOUTH-EAST CORNER FORTY-NINTH AND MARKET STREETS

M. W. ALEXANDER



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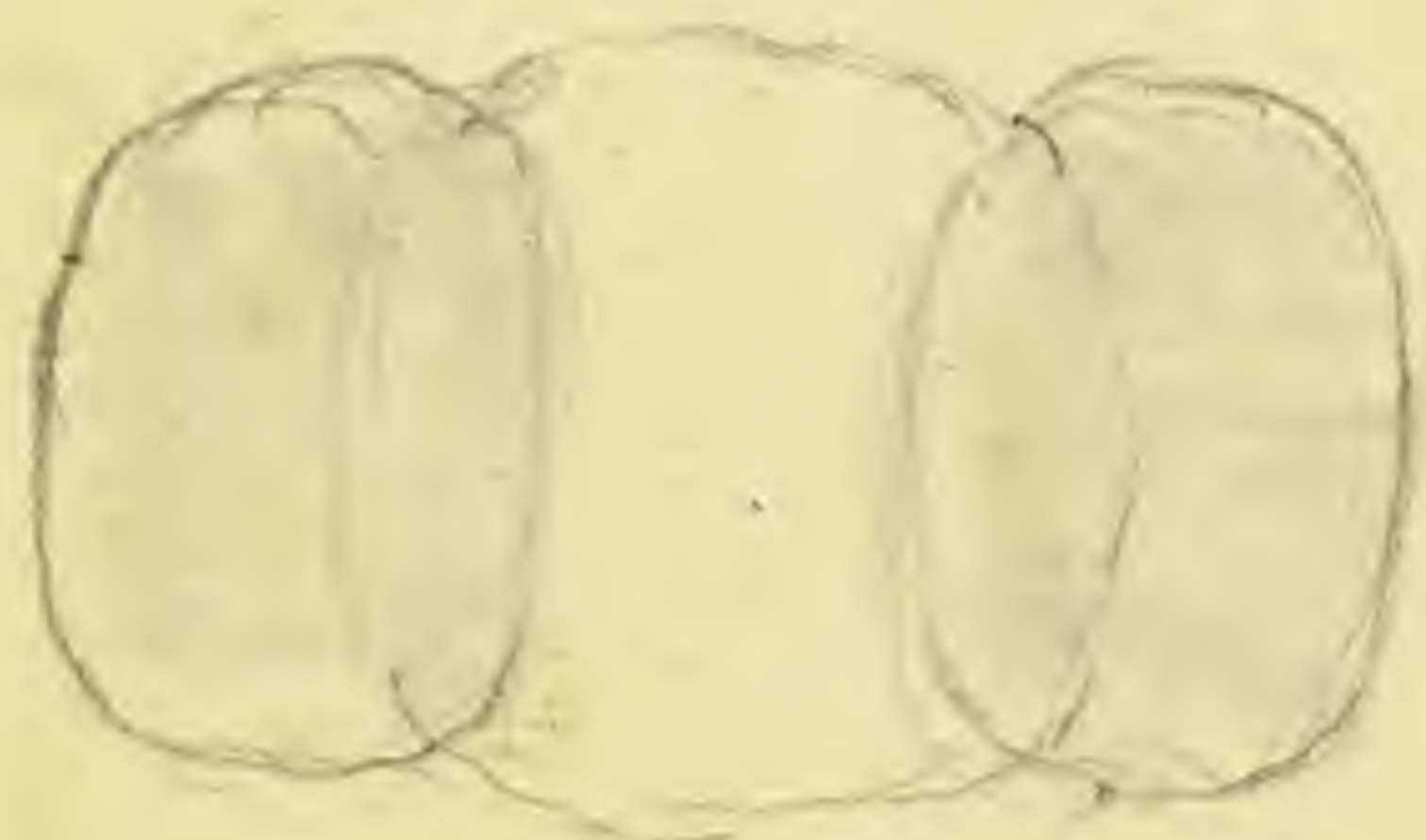
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X415

"Pinus maritima"

8th Octob 1863

H.B. Neapol. March 1858



Pollen unripe, but
in many grains cells not
so full.



X10



X4



6
scales

in all 3 segments

examined



0.029 - 0.033

mean perhaps 0.032



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JONES & LETCH
Druggists
Cor. Fifth & Market Sts. ST. LOUIS, MO.

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x415

"Pinus Lyriata"

Octob 8th 1863

H. B. Meadol 8 March 1858



pollen very young
& incomplete



x4



x10



6.5 m

largest but still very

incomplete
Pollen grains

0.029



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Jun 28 1876

Mexican Pale Cone

sec² from Vamora

in Spruce Egg. white



alb. x4

seed x4

5 cotyledons

in 2 seeds examined

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GEORGE ENGELMANN PAPERS

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Leitch & Corlies

DRUGGISTS

South West

Corner Fifth
and Market
Streets.

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"*Pinus occidentalis*"
in part, Humboldt

May 30 1878

x30



- *Bentham?* No 3913 - Hb Berlin

no ducts,
very little hypodermis
on angles or around

x60



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GARDEN

11605

HENRY T. ROHLING,

APOTHECARY,

No. 2600 Laclede Ave., S. W. Cor. Jefferson Ave.,
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No. Date, ... 187

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MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Geo. Engelmann, M. D.,

No. 3003 Locust Street,



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